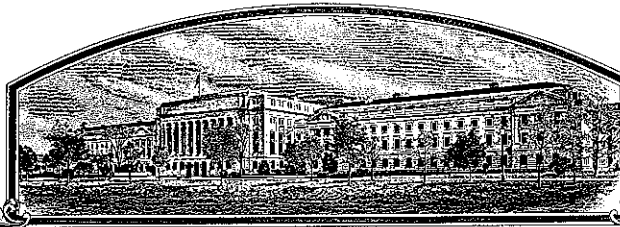


No.

9800025



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Hartz Seed - A Unit of Monsanto

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (34 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'Hartz H 4994 RR'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirty-first day of March, in the year of our Lord two thousand.

Attest:

Ann Marie Chro

Commissioner
Plant Variety Protection Office
A. S. 1999

Stan G. Hillman

Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY DIVISION - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) Hartz Seed - A Unit of Monsanto		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER Hartz HX4994 RR		3. VARIETY NAME Hartz variety H4994 Roundup Ready	
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) P. O. Box 946 2478 Highway 130 East 901 N. Park Avenue Stuttgart, AR 72160 JL 70 Oct. 1999		5. TELEPHONE (include area code) 672-4124 (870) 673-8565		FOR OFFICIAL USE ONLY PVPO NUMBER 8800025 DATE 13 NOV 97 FILING FEE DATE 27 OCT 97 RECEIVED CERTIFICATION FEE \$300 DATE 11/8/99	
		6. FAX (include area code) Mobile (870) 672-2586 (870) 673-2838			
7. GENUS AND SPECIES NAME Glycine Max		8. FAMILY NAME (Botanical) Leguminosea			
9. CROP KIND NAME (Common name) Soybean					
10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name) Corporation					
11. IF INCORPORATED, GIVE STATE OF INCORPORATION Delaware			12. DATE OF INCORPORATION 1984		
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Dr. Edward A. Brown Floyd Hancock, Station Manager Hartz Seed - A Unit of Monsanto 901 N. Park Avenue 2478 Highway 130 East JLS, Oct. 7, 1999 Stuttgart, AR 72160				14. TELEPHONE (include area code) 870-672-4124 (870) 673-8565	
				15. FAX (include area code) Mobile (870) 673-2838 672-2586	
16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)					
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of the Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Applicant's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to PVPO)					
17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act) <input type="checkbox"/> YES (If "yes," answer items 18 and 19 below) <input checked="" type="checkbox"/> NO (If "no," go to item 20)					
18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input type="checkbox"/> NO			19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED		
20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES? <input type="checkbox"/> YES (If "yes," give names of countries and dates) <input checked="" type="checkbox"/> NO					
21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned applicant(s) is(are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.					
SIGNATURE OF APPLICANT (Owner(s)) Edward A. Brown			SIGNATURE OF APPLICANT (Owner(s))		
NAME (Please print or type) Edward A. Brown			NAME (Please print or type)		
CAPACITY OR TITLE Director of Research		DATE 11/6/97		CAPACITY OR TITLE	
				DATE	

EXHIBIT A
Origin and Breeding History

Summer 1993	Original cross made at Stuttgart, AR Cross number was 93323 Parentage: Hartz 4994 x F1(Hartz 5033 x Hartz 4464 RR) Hartz 4994 = Asgrow 5474 x Pioneer 5482 Hartz 5033 = Asgrow 5474 x Essex Hartz 4464 RR = Hartz 4464(3) x Monsanto 40-3-2
December 1993	Hartz 4994 crossed with Roundup Ready F1 of cross F1 plants sprayed with Roundup™ herbicide to identify tolerant plants. Cross made in winter nursery near Ponce, Puerto Rico.
March 1994	Hartz 4994 crossed with BC1F1 plants from previous crossing. Cross made in winter nursery near Ponce, Puerto Rico.
July 1994	Hartz 4994 crossed with Roundup Ready BC2F1 plants from previous crossing. Cross made at Stuttgart, AR.
December 1994	BC3F1 seed planted in winter nursery near Ponce, Puerto Rico. Plants were sprayed with Roundup™ herbicide to identify tolerant plants.
February 1995	Seeds from BC3F1 Roundup tolerant plants were planted in winter nursery near Ponce, Puerto Rico to produce about 400 BC3F2 plants. Approximately 300 BC3F2 plants with a phenotype similar to the recurrent parent were selected.
May 1995	About 300 BC3F3 single plant rows planted at Stuttgart, AR. About 250 of these were selected and bulked at maturity to produce breeder seed.
October 1995	Planted 4 acre breeder seed increase near Ponce, Puerto Rico.
January 1996	Planted 70 acre seed increase near Hernando, Cordoba, Argentina.
June 1996	Planted about 800 acres of seed production near Stuttgart, AR. Yield Tested in AR-MS-TN-LA-MO-SC-NC.

Kinds and Frequency of variants observed:

Plants with purple flowers and brown pubescence have been observed at a frequency of about 2 seeds/lb. Plants with white flowers and gray pubescence have been observed at a frequency of about 1 seed/lb.

EXHIBIT B
Novelty Statement

To our knowledge, Hartz variety H4994 Roundup Ready most closely resembles the variety Manokin, however, it is two days earlier and exhibits tolerance to the over-the-top applications of Roundup™ herbicide.

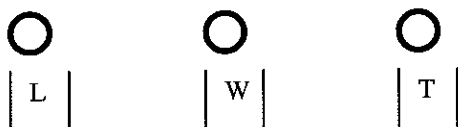
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

OBJECTIVE DESCRIPTION OF VARIETY
SOYBEAN (Glycine max L.)

NAME OF APPLICANT(S) Hartz Seed - A Unit of Monsanto	TEMPORARY DESIGNATION Hartz HX4994 RR	VARIETY NAME Hartz variety H4994 Roundup Ready
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code)		FOR OFFICIAL USE ONLY
		PVPO NUMBER 9800025

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant date in you answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.). Starred characters★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE



1= Spherical (L/W, L/T, and T/W ratios - <1.2)

2= Spherical Flattened (L/W ratio >1.2; L/T ratio = <1.2)

3= Elongate (L/T ratio > 1.2; T/W = <1.2)

4= Elongate Flattened (L/T ratio >1.2; T/W >1.2)

★ 2. SEED COAT COLOR

1= YELLOW

2= GREEN

3= BROWN

4= BLACK

5= OTHER (Specify) _____

3. SEED COAT LUSTER

1= Dull ('Corsoy 79'; Braxton')

2= Shiny (Nebsoy'; Gasoy 17")

★ 4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

★ 5. HILUM COLOR: (Mature Seed)

1= Buff

2= Yellow

3= Brown

4= Gray

5= Imperfect Black

6= Black

7= Other (specify) _____

★ 6. COTYLEDON COLOR: (Mature Seed)

1= Yellow

2= Green

★ 7. SEED PROTEIN PEROXIDASE ACTIVITY:

1= Low

2= High

★ 8. SEED PROTEIN ELECTROPHORETIC BAND:

1= Type A (SP1^a)

2= Type B (SP1^b)

★ 9. HYPOCOTYL COLOR:

1= Green only (Evans'; Davis')

2= Green with bronze band below cotyledons (Woodworth'; Tracy')

3= Light Purple below cotyledons (Beeson'; Pickett 71')

4= Dark Purple extending tounifoliate leaves (Hodgson'; Coker Hampton 266A')

★ 10. LEAFLET SHAPE:

1= Lanceolate

2= Oval

3= Ovate

4= OTHER (Specify) _____

11. LEAFLET SIZE:

- 2 1= Small ('Amsoy 71'; 'A5312') 2= Medium ('Corsoy 79'; 'Gasoy 17')
3= Large ('Crawford'; 'Tracy')

12. LEAF COLOR:

- 2 1= Light Green ('Weber'; 'York') 2= Medium Green ('Corsoy 79'; 'Braxton')
3= Dark Green ('Gnome'; 'Tracy')

★13. FLOWER COLOR:

- 1 1= White 2= Purple 3= White with Purple throat

★14. POD COLOR:

- 2 1= Tan 2= Brown 3= Black

★15. PLANT PUBESCENCE COLOR:

- 2 1= Gray 2= Brown (Tawny)

16. PLANT TYPES:

- 2 1= Slender ('Essex'; 'Amsoy 71') 2= Intermediate ('Amcor'; 'Braxton')
3= Bushy ('Gnome'; 'Govan')

★17. PLANT HABIT

- 1 1= Determinate ('Gnome'; 'Braxton') 2= Semi-Determinate ('Will')
3= Indeterminate ('Nebsoy'; 'Improved Pelican')

★18. MATURITY GROUP:

- | | | | | | | | | |
|---|--------|---------|----------|--------|-------|--------|-------|------|
| 7 | 1= 000 | 2= 00 | 3= 0 | 4= I | 5= II | 6= III | 7= IV | 8= V |
| | 9= VI | 10= VII | 11= VIII | 12= IX | 13= X | | | |

★19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

BACTERIAL DISEASES:

- ★ 2 Bacterial Pustule (*Xanthomonas phaseoli* ar. var. *sojensis*)
★ 2 Bacterial Blight (*Pseudomonas glycinea*)
★ 0 Wildfire (*Pseudomonas tabaci*)

FUNGAL DISEASES:

- ★ 2 Brown Spot (*Septoria glycines*)
Frogeye Leafspot (*Cercospora sojina*)
★ 0 Race 1 0 Race 2 0 Race 3 0 Race 4 0 Race 5 0 Other (specify) _____
0 Target Spot (*Corynespora cassiicola*)
2 Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)
2 Powdery Mildew (*Microsphaera diffusa*)
★ 0 Brown Stem Rot (*Cephalosporium gregatum*)
1 Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

19. DISEASE REACTION: (ENTER 0 = Not Tested; 1=Susceptible; 2=Resistant)(Continued)

FUNGAL DISEASES: (Continued)

* ☒ 2 Pod and Stem Blight (*Diaporthe phaseolorum* var. *sojae*)☒ 2 Purple Seed Stain (*Cercospora kikuchii*)☒ 0 Rhizoctonia Root rot (*Rhizoctonia solani*)Phytophthora Rot (*Phytophthora megasperma* var. *sojae*)* ☒ 1 Race 1 ☒ 1 Race 2 ☒ 1 Race 3 ☒ 1 Race 4 ☒ 0 Race 5 ☒ 0 Race 6 ☒ 1 Race 7☐ Race 8 ☐ Race 9 ☐ Other _____

VIRAL DISEASES:

☒ 2 Bud Blight (Tobacco Ringspot Virus)☒ 0 Yellow Mosaic (Bean Yellow Mosaic Virus)* ☒ 0 Cowpea Mosaic (Cowpea Chlorotic Virus)☒ 0 Pod Mottle (Bean Pod Mottle Virus)* ☒ 2 Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

Soybean Cyst Nematode (*Heterodera glycines*)* ☐ Race 1 ☐ Race 2 ☒ 2 Race 3 ☐ Race 4 ☒ 2 Other __9, 14_____☒ 0 Lance Nematode (*Hoplolaimus Colombus*)* ☒ 1 Southern Root Knot Nematode (*Meloidogyne incognita*)* ☒ 0 Northern Root Knot Nematode (*Meloidogyne Hapla*)☒ 1 Peanut root Knot Nematode (*Meloidogyne arenaria*)☒ 0 Reniform Nematode (*Rotylenchulus reniformis*)☐ OTHER DISEASE NOT ON FORM (Specify) _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

* ☒ 0 Iron Chlorosis on Calcareous Soil☐ Other (Specify) _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

☒ 0 Mexican Bean Beetle (*Epilachna varivestis*)☒ 2 Potato Leaf Hopper (*Empoasca fabae*)☐ Other (Specify) _____

22. WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	Manokin	Seed Coat Luster	
Leaf Shape	Manokin	Seed Size	
Leaf Color	Manokin	Seed Shape	
Leaf Size		Seedling Pigmentation	

8300025

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS TO MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. OF SEED IN POD
				CM WIDTH	CM LENGTH	% PROTEIN	% OIL		
<u>SUBMITTED</u> Hartz variety H4994 Roundup Ready	130	1.0	81	--	--	--	--	14.5	2-3
<u>NAME OF SIMILAR VARIETY</u> Manokin	132	1.0	76	--	--	--	--	15.0	2-3

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybean: Improvement, Production, and Uses. Amer. SocAgron. Monograph No. 16
2. Buttery, B.R. and R. I. Buzzell, 1968. Peroxidase activity in seeds of soybean varieties. CropSci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A₂ in the USDA soybean germplasm collection. CropSci., 13: 420-421.
4. Payne, R.C. and L.F. Morris, 1976. differentiation of soybean cultivars by seedling pigmentation patterns. J. SeedTechnol. 1: 1-19.

STATEMENT OF THE BASIS OF OWNERSHIP

certificate is to be issued (7 U.S.C. 2421). Information is held until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S)

Hartz Seed - A Unit of Monsanto

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER

Hartz HX4994RR

3. VARIETY NAME

Hartz variety H4994 Roundup Ready

4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)

P. O. Box 946
901 N. Park Avenue
Stuttgart, AR 72160

5. TELEPHONE (include area code)

(870) 673-8565

6. FAX (include area code)

(870) 673-2838

7. PVPO NUMBER

9860025

8. Does the applicant own all rights to the variety? Mark an "X" in appropriate block. If no, please explain.

☒ YES

☐ NO

9. Is the applicant (individual or company) a U.S. national or U.S. based company?

If no, give name of country

☒ YES

☐ NO

10. Is the applicant the original breeder? If no, please answer the following:

☒ YES

☐ NO

a. If original rights to variety were owned by individual(s):

Is (are) the original breeder(s) a U.S. national(s)? If no, give name of country

☒ YES

☐ NO

b. If original rights to variety were owned by a company:

Is the original breeder(s) U.S. based company? If no, give name of country

11. Additional explanation on ownership (If needed, use reverse for extra space):

PLEASE NOTE:

Plant variety protection can be afforded only to owners (not licensees) who meet one of the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original breeder, both the original breeder and the applicant must meet one of the above criteria.

The original breeder may be the individual or company who directed final breeding. See Section 41(a)(2) of the Plant Variety Protection Act definition.

Public reporting burden for this collection of information is estimated to average 10 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Agriculture, Clearance Officer, OIRM, AG Box 7630, Jamie L. Whitten Building, Washington, D.C. 20250. When replying, refer to OMB number 0581-0055 and form number in your letter.

Under the PRA of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

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